



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

quickly in this way as if it were left to Congress, with far less, and less deleterious, excitement, and infinitely more satisfaction over the result. If, then, the Presidential election should be held as now in November, or, still better, in October, the completely certified votes of all the States, — even if some one or more of them should have been compelled to remedy the defects of a first election, — would be ready for Congress at its meeting in December, in season to have the result proclaimed by the President, and, if necessary, another election appointed in January, under the condition that the voting should be confined to the two highest candidates at the first election.

If, however, it should be deemed best, in the event of a failure to elect a President and Vice-President by the people, to throw the election into Congress, then the present method of taking the vote there should be done away, root and branch. The true mode of procedure would be for both Houses of Congress to meet in joint convention, each Senator and Representative having one vote. This plan has met the approval of both Senator Sumner and Senator Morton, the latter saying of it: "This would be in exact harmony with the principles upon which the election is now to be made by the people of the several States." With regard to this measure of electoral reform, at least, we do not think there can be diversity of opinion enough among reflecting men to call for any argument.

ART. V. — *On Intelligence*. By H. TAINE, D. C. L., Oxon.

Translated from the French by T. D. HAYE, and revised with Additions by the Author. New York: Holt and Williams. 1872.

As an historian of art and literature, M. Taine is known to all the world. His lucid and sparkling expositions of the characteristics of Italian and Flemish painting, and his brilliant delineations of the distinctive traits of English authors, are familiar to every intelligent reader. As a metaphysician, however, we fear that he has yet been hardly noticed. We

doubt if the work whose title we cite for our text has had already more than a handful of readers. And yet it is a book eminently worthy of study, exceedingly interesting, even to him who reads merely for entertainment. It is destitute of none of the charms of diction which lend such fascination to his more familiar works. His views come before us with an admirable order, whose perfect sequence seems almost a demonstration. Every idea is clear-cut. Every expression is a transparent medium through which the thought is seen as easily and surely as pebbles in a pure mountain pool. No technical, eccentric, or too abstract phraseology necessitates, as with so many philosophical writers, a continual process of translation into common language before we can understand what is meant. Curious examples and striking illustrations clothe the argument with captivating draperies. In short, M. Taine in this, as in his other works, shows everywhere the genuine French *esprit*. His Gallic blood is the sufficient guaranty that, however solid and forbidding be the title and the subject of the work, the contents will not fail to furnish appetizing food, even to those who can relish nothing that is not light and well spiced.

And to the serious student it is of great importance. M. Taine calls it himself "the work that he has most fully meditated." In the determination of his rank as a thinker, he would doubtless prefer to be judged by it rather than by any of his more popular volumes. He looks, we imagine, to this, rather than to those, to establish his claim to a permanent and high place in standard literature. For it contains in full and reasoned form the principles that all his other works variously illustrate. Many critics seem to have no settled standards. They praise or blame as they happen to fancy. Many historians appear to have no suspicion of any order in their department. They are content to trace down the line of events as a mere capricious succession, without grasping any underlying principles. They sketch epochs and their leaders, and pronounce their judgments without mistrusting any connection between the individual and his time. This was once thought entirely sufficient. But the demand at the present time is for the discovery of the laws of things. The modern critic or historian

must be a philosopher. He must tell us the *rationale* of every change. He must find some familiar law hid under every odd aspect. The reader of Hippolyte Taine knows him as emphatically a writer of this latter stamp. He has most evidently definite theories, and he is uneasy till he finds each phenomenon that he takes up conform to some of his established rules or favorite hypotheses. History, in his view, is but applied psychology. "The historian," he says, "notes and traces the total transformation presented by a particular human molecule or group of human molecules, and, to explain these transformations, writes the psychology of the molecule or group. Carlyle has written that of Cromwell; Sainte-Beuve, that of Port Royal; Stendhal has made twenty attempts on that of the Italians. M. Renan has given us that of the Semitic race. . . . The task is invariably the description of a human mind or of the characteristics common to a group of human minds."

For fifteen years, as M. Taine says, he had labored at these special and concrete psychologies. In the present work he attempts general and abstract psychology.

The principles which in his other works are hinted at and illustrated — which, when unexhibited, nevertheless guide his criticisms, mould his thought, supply the mental fibre for those ties which he believes he sees running up and down and out and in — are here formally stated, supported, and defended. He who would know their strength or their weakness — the strength or the weakness of his whole literary work — may best determine it by an examination of this his fullest exposition of them.

There are two great ways of studying the human mind, quite opposite to each other. One is to observe man from the inside; the other, to observe him from the outside. The first method employs consciousness as its chief instrument. It fixes the attention upon the various operations of the mind as they take place within, and endeavors by a direct sight, as it were, to see what it is that actually occurs when we feel, or perceive, or recollect, or imagine. It seeks to discriminate between the nature of various mental processes and between the various steps of these processes. From the various mental states it derives the faculties in which they originate. From properties it deduces substances; from effects, causes.

The facts of which it thus finds the mind directly conscious, and the deductions it makes from them, it takes as entirely trustworthy, and uses them to cut at a blow every troublesome knot. Reaching its results thus from the inside, it believes that it penetrates to the very ultimate sources and hidden essences of things. This is the most natural and easy way of studying man. It opens at once a grand mine and a rich one. At first, apparently, it is the most fruitful one that could be worked. In it Socrates and Plato and Descartes found the precious jewels of knowledge which shine as diamond circlets about their names. While physical science was still indulging in the crudest fancies, entirely without organization or solid basis of laws, mental science, thanks to this direct view of the interior of the mind which consciousness gave, had already made discoveries so great that it has since been able to add comparatively little to them. Until the time of Bacon this method of psychological observation enjoyed almost a monopoly. But when the inductive method had shown in the fields of physical research what great conquests it was capable of making, it was natural that it should be applied to the investigation of the mind also. The nature of the soul now came to be studied in its effects. Ethnographers noted the characteristics of races; philologists, the manifestations of intelligence in language; political writers, its play in civil construction. Anatomists patiently searched into the structure of the physical organism. Physicians watched the variations in human conduct produced by abnormal conditions of mind and body. By comparison and statistics, these results are generalized. By subtle analysis their results are disengaged. Passing by the profounder inquiries as to the essences and causes of things, it addresses itself directly to observing the succession of emotions and ideas, — remarking the constant association among them, and learning the outward conditions of mental phenomena, and the formation of the more complex from the more simple.

This method of studying the mind as a distinct and valuable process may be traced back, as we have already hinted, to the grand reformation in investigation which Bacon worked. In the seventeenth and eighteenth centuries, Locke and Hume, Berkeley and Condillac, used it with great effect. At the present

day, it is the method by which Buckle and Bain, Maudsley and John Stuart Mill, have reached, or pretend to have reached, such astonishing results, laying the axe to the root of the most accepted beliefs, and establishing as facts, so it is claimed, the most paradoxical of theories.

Now in France, since the close of the Middle Ages and the decease of scholasticism, these two fundamental methods have been two opposite poles between which philosophical thought has swung to and fro.

The metaphysical needle, vibrating from the theories of Descartes to those of Malebranche, then to those of Arnault, and next to those of Condillac, was found in the eighteenth century pointing strongly to a pronounced sensationalism, and even to an undisguised materialism. The eighteenth century, therefore, naturally commenced with a reaction. Philosophy, having lived for three quarters of a century with no other food than matter, motion, and what the senses had to give, thirsted by this time for more solid food. It was weary of Condillac and the Encyclopedists, and welcomed with enthusiasm the doctrines which Laromiguière, Roger Collard, and Maine de Biran proclaimed in opposition to them. These returned to the older method of studying the mind, — the internal. They replaced consciousness and common-sense on the seats of authority. They asserted for the mind an independent power or source of knowledge. Some first principles, some fundamental laws of belief, are necessary, they asserted, to give a basis to knowledge. These are discovered and established by the inward sense, especially by reflection. The mind knows itself directly, not only as a cause, but as a permanent cause. It has independent activity and durable unity. The mind recognizes a distinction between the affections of its causative energy and of its organism, and thus recognizes its organism as something different from itself. The muscular efforts of the organism meet resistance from without, and by induction, combined with the intuition of the principle of causality, the mind knows an external material world as the cause of the resistance. The ideas of cause, substance, space, time, are not mere signs or extracts from sensation or derivations from experience, but are fundamental notions, of which the intelligence

cannot divest itself, — ideas which must be regarded as universal and absolute.

These views, boldly and eloquently advocated, turned quite round again the current of French philosophy. Where not accepted and reasserted in their detail, they were in their principles and most important results. Jouffroy did little more than apply their results in the sharp and well-sustained distinctions which he drew between physiology and psychology. Cousin, starting forth under their impulsion, explored ancient and modern philosophy, culling whatever he thought would support or harmonize with them, and formed his famous Eclectic system, which, for a time, was popular. Philosophy had been living in a profound ignorance of the past, and with ardent enthusiasm betook itself to the newly opened door through which it was given such curious pictures of ancient schools and foreign systems. Cousin had perfect command of a rich and beautiful style, — a style full of rhetorical effects and poetic images as well as of formulas borrowed from all the schools, and with the art of the great writer could mould all the forms of ancient and modern thought into a harmonious unity. He came before his scholars, not so much as an investigator or a teacher, as in the rôle of a magnificent orator, a commanding and inspiring preacher. Vague, incoherent, and superficial as was his system, improvised hastily out of elements borrowed from the Greek, German, Scottish, and French schools, and as intolerant in his conclusions as he was uncertain in his methods, he yet found it easy to win over the public. The great truths which he brought back to notice they were eager to embrace, no matter how crudely they were presented. In the absorbing taste for the novel revelations of history, erudition seemed to make science unnecessary. It was enough to give Eclecticism authority at that time, that it profoundly moved the feelings, whether or not it enlarged or purified the realm of ideas. If it could not maintain its positions before the analysis of severe judges, it possessed, nevertheless, that magical charm of style and eloquence that for a time turned its judges into admirers, and made stern criticism an impertinence.

But in the last few years the needle of French thought has shifted back once more to the opposite point of the compass.

The inevitable reaction has set in. The younger minds have felt the need of new solutions and surer methods. They have become tired, in their turn, of the continual intervention of consciousness, as a *Deus ex machina*, to solve every troublesome question, and have become sceptical as to its legitimacy and its value. They are irritated at finding their exploring feet ever stopped by the same eternal blind walls,—self, substance, power, time, space,—beyond which they are denied further advance. They are unwilling to yield these up as belonging to the impenetrable arcana of faith. They will some way find out what is inside of them, or they will prove them to be but illusions. They are no longer willing to take the dicta of unlearned common-sense as decisive. They bring everything to the test of analysis and experience. They have revived the critical spirit,—the criticism that judges not by prejudice and personal taste and varying moods, however fine, but by well-established laws and a clear discrimination of what conforms to them. Especially they have not believed that all scientific observation lay in the study of the past, as was imagined in the antiquarian fervor of Cousin's day. They have devoted themselves with an ardor, oppositely directed, but similar in intensity, to contemporary science and exact observations of nature. They have introduced scientific methods and theories into all parts of philosophical speculation,—into metaphysics, psychology, logic, and even morality. Philosophy no longer looks for its allies to history, literature, or religion. Its destiny lies no longer in their hands. It is rather to science that the looks of the various schools are directed, here with fear, there with hope, as exhausted armies look to a newly arrived column as the arbiter of the contest.

Theories of mental processes, if they would receive favor, must be based upon disclosures of physiology and natural history. No solution of an intellectual process is considered satisfactory that cannot claim corroboration by physical facts and hypotheses.

This scientific current is moving more or less all schools of thought. Spiritualists as well as materialists bear testimony to its influence. Even men like Janet, Lévêque, Ravaisson, seem to be possessed with one constant idea,—that of finding,

if possible, in scientific theories and authorities auxiliaries for a spiritual philosophy which may harmonize itself with the progress of the positive sciences.*

Such is the changed phase which of late psychology in France has assumed. It is to this new school, full of what many would call the most revolutionary ideas, that Taine unmistakably belongs. He has a thorough contempt for orthodoxy. Educated in the *École Normale*,—a school whose professional object is to train instructors for the University,—instructed strictly to respect the accustomed masters, the theories of the great French ideologists only aroused in him the greater repugnance. He turned, instead, to the school of the English Cerebralists, and the older sensationalism which France herself had seen. It would be hardly just to call him a disciple of either Bain, Spencer, or Mill. His system has been worked out independently, from a basis of its own. Mr. Mill, from whom he seems to have studied and learned the most, he distinctly opposes in several important points. Nor would it be quite fair, either, to call him a follower of Condillac. His work is too broad and too original to be set down as an imitation of any one else's. And yet the powerful influence of those great English thinkers is very noticeable in M. Taine's system; and the theories of the famous treatise on Sensations, which for a century had lain dormant for want of satisfactory evidence, are plainly the quickening suggestions which have produced this so much more highly developed and more firmly knit work, strengthened by abundant proofs from the discoveries of modern physiology.

In this last lies the most prominent trait of M. Taine's work,—the assistance that it continually derives from the investigations of natural science. Of the two great methods of studying the mind which we have spoken of, the second, i. e. observation from the outside, especially by scrutiny of the structure and working of the physical organism, is the only one that he trusts.

In psychological inquiries he says that "consciousness is

* For this sketch of contemporary philosophy in France, we are happy to acknowledge our indebtedness to an article of M. Vacherot's in the *Revue des Deux Mondes* for July, 1870.

not sufficient in its ordinary state. It is no more sufficient than the naked eye is in optical inquiries. It is necessary continually to beware of it; to test and correct its evidence; nearly always to assist it; to present objects to it in a brighter light; to magnify them and construct for its use a kind of microscope or telescope." Taine finds this means of correcting or magnifying consciousness in the discoveries of anatomists as to the mechanism which the mind employs, and in the abnormal cases given us by the illusions of sickness, dreams, somnambulism, hypnotism, and lunacy. Having enjoyed several years of study in some of the famous Parisian schools of medicine, he has become fascinated with their marvels, and believes that in them lie the keys which will unlock all mental problems. He has studied diligently the great physiologists, the chief medical authorities, the records of hallucinations, and all kinds of mental eccentricities. He quotes profusely from such writers as Müller, Helmholtz, Baillarger, Brierre de Boismont, Maury, Longet, Gratiolet, Vulpian. These supply him with the materials for his system; nay, we may say that these are the masters who have determined its character.

The work is divided into two parts; one analytical, the other synthetical. In the first, the elements of knowledge are determined. By successive reductions the simplest forms are reached, and the physiological changes which are the condition of their origin are considered. In the second part, the mechanism and general effect of the combination are described. Then the law that has been discovered is applied, and the formation, certitude, and range of the principal kinds of knowledge are examined.

M. Taine commences with an examination of words and the mental process connected with them. The old nominalist controversy is not to him either foolish or antiquated. In the solution of the question it raised, — What is the import of an abstract word? — is the basis of the philosophy, which shall not be misled by empty illusions. Taine maintains that the word is a mere sign, — a substitute for sensations or images which are too complex to be conveniently reproduced. He disbelieves entirely in the existence, even the mental existence, of any gen-

eral idea. All that passes within, when from several perceptions we disengage what we call a general notion, is simply the experience of a *tendency which urges an expression*. To imagine the abstract conception something apart from the word, to suppose that we can conceive ideal objects, is a singular illusion. We overlook the name which is the whole substance of the operation.

The abstract name denotes, he admits, a common character, an extract of the essential qualities of the given class of objects. But of this extract, the detached and isolated fragment common to all the members of the class, we cannot have either experience, perception, or sensible representation. Even the imagination can command only a varying and shifting image of it. The precise and fixed thing which we call an idea is therefore but a verbal sign, which suggests itself to the mind at the stimulus of the slightest observed point of resemblance, and enables us to carry on rapidly courses of reasoning and processes of communication.

Having swept away the whole class of general ideas into the realm of nonentity, and having thus attached the abstract name directly to the sensible image or affection of sense as a mere sign, he has at one blow cleared the way to the pure sensationalism which he would establish. The further reduction goes on now naturally and easily. Taking up the image, he finds that to be but the echo or the revivification of a sensation, of the same nature in every important respect as the sensation itself. It is distinguished from the sensation only by being excited internally, by an antecedent sensation or a disturbance of the nervous centres; while the sensation proper arises directly from a disturbance of a nerve extremity. The image is generally fragmentary, fugitive, and weak; but sometimes, by exclusive attention or through strong emotion, it may acquire the energy and distinctness of the sensation. This excess may be corrected by the simultaneous feeling of an antagonist sensation. In short, as the word is the more convenient substitute which acts for the image, so the image, in the same way, is the substitute which replaces the sensation.

By reduction upon reduction, Taine thus reaches the primitive fact, sensation, of which all the rest, whether images or ideas, are but repetitions more or less disguised.

This element appears irreducible. It is so to consciousness. But science, however, can separate many of these apparently indivisible sensations into their elements. For example, in sensations of hearing, the physical experimenter, by such instruments as Lavart's wheel or Latour's siren, can demonstrate that sensations that seem wholes are really composed of parts. Small separate sensations, repeated in quick and regular succession, unite in a continuous musical note. Noises are composed of a number of similar separate and small but irregular sensations. When isolated, these small sensations are not perceived by the inner sense. They must be added together so as to make a certain bulk, and to occupy a certain time, but they still exist. A similar, though less complete, reduction M. Taine makes with sensations of the other senses.

The same law, that every apparent whole of sensation is composed of smaller parts, and each of these parts of more infinitesimal sensations, imperceptible to consciousness, is true of them all. And the antecedents of these larger or smaller sensations are always certain molecular movements in the nerves, equally infinitesimal and imperceptible to the senses, known only by processes of reasoning. Of this physical, external fact the sensation is the internal substitute.

Having come here to the end of the psychological analysis, he changes his route and turns to physiological examination. He considers the organism of intelligence. He finds the immediate condition of sensations in molecular disturbances of the sensitive centres, i. e. the encephalon. Images are occasioned by repetitions of these molecular motions in the cerebral lobes, on entering which they become capable of persisting and of indefinite revivals and interactions. Reflex actions are occasioned by nerve currents transmitted, not to the sensitive centres, but only to the spinal marrow, and exciting fragmentary actions analogous to those which excite elementary sensations imperceptible to consciousness.

We find, then, that every mental event is accompanied by some physical change. What then is the relation of the mental and physical world? Inseparably connected as they are, yet the two series have nothing apparently in common. And however closely we study the two, we find them no

more reducible the one to the other. The physiologist, relying on the constant connection of mental events with motions of the nervous centres, says that the first are but a function of the second. The philosopher, resting on the irreducibility of the two, says that mental events belong to a separate mental being. Cautious on-lookers interpose and conclude: Here is an insurmountable difficulty, let us be content to remain in ignorance. M. Taine, however, is not content to pause here. He believes that he can press further into the mystery. He says that the incompatibility of mental and physical events is on our side, — not on theirs. It is due to the different channels by which we gain knowledge of them.

One and the same electric shock, acting on the optic nerve, appears as a flash of light, on the acoustic nerve as a sound, on a nerve of touch as a blow. The different psychological appearances are due to the different routes by which the same event enters the mind. So when we examine the idea of a sensation and of a molecular movement, we find that they enter the mind by routes directly opposite, — one from within, without any intermediate; the other from without, through many intermediates. Being known in these two opposite ways, one and the same single event will appear double. The sensation and the molecular movement of the nervous system may be regarded, then, as at bottom one and the same event, — opposite aspects of the same thing. The difficulty of two separate things occurring always simultaneously and in mutual dependence, to account for which the philosophers of the seventeenth century, Leibnitz and Malebranche, had to call in the hypothesis of a pre-established harmony, is entirely removed.

Nature, then, has two faces. In the one the object is presented as it appears within, as it is known directly. In the other it is presented as it appears without, indirectly, by its effects, through its physical signs. Seen from the one side, nature has as elements events which we can know nothing of except when in extreme complication, and which in this state we call sensations. In the brain these are compounded into images and ideas. Beneath consciousness, they exist in lower and lower, simpler and simpler, forms. They are indicated by all reflex actions; they may be traced down in rudimentary

form, the lowest point of the animal scale, nay, into the vegetable kingdom. There is no radical difference between animals and vegetables when looked at in this light. By pursuing analogies we may descend in the scale of beings. For the inorganic world is but a special case of the organic world, differing in degree, but identical in nature.

When seen from the other side, — the physical, — nature has as elements events which we can conceive clearly only when in a state of extreme simplicity, and which in this state we term molecular movements. As from the level of sensation mental events descend, decreasing in complexity; so from the level of molecular motion physical events ascend, constantly increasing in complexity, as we pass from the most elementary phenomena of physics to the highest operations of the cerebral lobes. Through the whole scale there occur, looked at from this side, only mechanical movements of atoms. What we term life is but a more delicate chemical action of more complex chemical elements. From base to summit the correspondence on either side is perfect. Phrase for phrase the physical event, as we represent it to ourselves, translates the mental event. (Book IV. ch. 2.)

And now that our events have been considered, what is the being they pertain to, which each calls himself. Philosophers usually conceive it as a subject or substance different from the various sensations, images, perceptions, recollections, etc., which correspond to it, and having for its distinctive qualities certain faculties or powers.

Every part of this conception Taine would throw overboard without ceremony. Power, force, faculty, substance, self, matter, — these are all metaphysical entities, pure phantoms begotten of words, and vanishing as soon as we examine rigorously the meanings of the words. Power and force and faculty denote no occult essence, but simply the perpetual connection between one fact which is antecedent and another which is consequent. When I say that a stream has power to move a wheel, I mean only that when the stream falls on the wheel the wheel moves. This property of the one fact to be followed by another is, however, set apart by abstraction and kept in a distinct state by a separate name till the mind, forgetting its

origin, believes it to be independent and becomes the dupe of its own illusion.

With the fall of this illusion falls also that of self. For the powers of the self are what constitute it. The self, the one permanent substance, distinct from events, is seen to vanish and re-enter the region of words. All that remains of us are our events, sensations, recollections, images, ideas, resolutions. These are what constitute our being. Each of them is an element, fragment, extract of the Ego. Our successive events, then, are successive components of ourselves. The Ego is in turn each of these events. At one moment it is nothing more than the sensation of taste, at another nothing more than the sensation of suffering. These divisions, however, into different mental events, are purely fictitious, for the convenience of observation. They actually form a continuous web. We cannot say that it is the series of its events placed in succession, since it is not divided into events, except to observation. But still it is equivalent to that series. For if they were taken away nothing would remain ; they constitute it. (Book IV. ch. 3.)

Having upset this entity at the summit of nature, there remains at the foot another entity, matter, which falls by the same blow. When analyzed there remain but movements, present, future, or possible, connected with certain conditions and determined with relation to certain points. Thus in the physical and in the moral world nothing remains of what is commonly understood by substance or force. *The notion of fact or event alone corresponds to real things.* Chemical body, material atom, self, that which we term a being, is always a distinct series of events, each event being the condition of another and having another as its condition.

We have no difficulty, then, in comprehending the connection between the human and the physiological individual. All we have now before our eyes is a series of events termed self, connected with other events forming its conditions. The web of facts which make up our being is a distinct district in the aggregate constituted by the nervous functions, this aggregate itself being a distinct province in the entire living animal. This series is to our senses a series of molecular movements,

to our consciousness a series of sensations. In proportion as we descend the animal scale, we see it lose its domination and complexity and become reduced to the level of the others, while these in turn loosen their mutual connections and become insensibly degraded. To external perception, *they have all for condition of existence the integrity and renewal of the nervous system*, whose special activity they are ; and the beings more or less strictly bound together, which they constitute, whatever they may be to consciousness, with whatever names metaphysical or literary illusion may clothe them, *are subject to the same condition*. (Book IV. ch. 3.)

Having thus disengaged and determined the primordial elements, the task is now, with their combinations, to construct the rest. We perceive, we recollect, we foresee, we reason, we form abstractions and ideals. How can we accomplish these things ? Philosophers commonly say that we do these things because we have such and such faculties, memory, imagination, reason, etc. These are but verbal explanations, inherited from the schoolmen. These various actions are properly to be explained as transformations, by association or conflict of these mental elements, signs, images, sensations. Two principal processes are employed by nature to produce the operations we term cognitions ; the one consisting in the creation of illusions within us, the other consisting in their rectification. As in his "History of English Literature," treating of Hamlet's madness, he maintains that all men are more or less insane ; so here, in his philosophical analysis of the actions and knowledge of the mind, with the same itching after paradox he devotes himself to proving that the whole staple of the actions and knowledge of the mind is delusion. External perception, firstly, is essentially hallucination, — an hallucination generally resulting in truth, but still an hallucination. In every act of perception there are three steps : first, the antecedent, usually some external object ; second, by the sensation, an internal semblance or phantom of the object ; third, the affirmation or judgment. Now, for the third step, nothing is required beyond the presence of the second. Though usually excited by an external object, this intermediate element, sensation, may be excited by an image in the cerebral lobe, or

by some molecular disturbance in the nervous centres due to disease. The affirmative judgment — what we call the perception — none the less follows. We call it then a case of hallucination. But as in all cases the presence of this internal semblance is the immediate antecedent, as it is only this internal phantom which is taken for an internal object, all perceptions are really hallucinations. The objects that we touch, see, or perceive are really nothing more than inward phantoms, precisely similar to those which arise in the mind of the dreamer. The only difference is, that in the case of the dreamer the phantoms do not correspond to external objects then present; in the case of perception, they do.

Again, every sensation that we experience we assign to a certain place, — in the foot, the hand, the cheek. But this is but an illusion, as is abundantly proved by surgical operations. When a foot has been amputated, tinglings will be felt for many years as if in the foot no longer there, clearly referred to distinct parts, the second or third toe, the sole of the foot, etc. Disease of the marrow excites tinglings in the extremities. When a new nose is formed by turning down a flap of skin from the forehead, and the nose is touched, it seems still for a long time to be the forehead that is touched.

Or again, when we hear a sound, we say that is outside of us, say a dozen yards to the right. When we see the red of a cloth, we situate that also externally to us. But science shows us that neither are outside of us. There are only three certain molecular movements which act as antecedents. By disturbing the acoustic nerve by a blow on the head, a ringing sound is heard; by setting the retina in action by pressure on the eyeball, or agitating the optic nerve by disease or by a cut, luminous figures, patches, or sparks may be seen. The real situation of every sensation, whether of sound, of color, of pressure, of pain, is never outside of us, nor even at the nervous extremity, but is always in the sensory centres in the encephalon. The localizing judgment that situates them in this or that spot of the surface, or even outside of us, is an hallucination, although it generally is practically correct, inasmuch as the molecular disturbance that is the antecedent condition is usually found to be there.

In the same way, the image, the second great element of intelligence, is hallucinatory in its nature. The image is the echo or revival of the sensation. The more complete it is, the more does it seem a veritable present sensation. In sleep, natural or artificial, when the rivalry and correction of true sensations are removed, the image develops a perfect hallucination. When we are awake there is a similar tendency of the image to excite an hallucination, but it is repressed by simultaneous sensations. As in every representation, conception, or idea, there is an image or images, and as it matters little whether the hallucinatory process be commenced or completed, the state of our mind when we are awake and in health may be defined as a *series of hallucinations which do not become developed*. "The hallucination which seems a monstrosity is the very fabric of our mental life." (Part II. Book I. ch. 1.)

M. Taine next considers the processes of rectification by which these hallucinations are corrected and reduced to proper order. Perceptions of one sense are corrected by contradictory ones of another. Images are repressed either by antagonistic sensations or by other images and convictions incompatible with them. Thus an hallucination by a stronger contradictory hallucination is repressed, and is made to constitute sometimes a recollection, sometimes a prevision, now an imagination, and again a perception corresponding to real things and events, and thus constituting cognitions. Thus by experience our senses are educated. Our sensations, originally simple states of excitation, telling nothing of place, gradually are referred to different localities, according to the places where the nervous disturbance which starts them is found to be situated. By the muscular sensations of the arm, foot, eye, we learn distance. By combinations of the idea of distance, and through simultaneous sensations of the hand or eye, which sensations by education of the senses seem to be situated in distinct and continuous points, we derive the idea of extension, attributing to the object the continuity of our own sensation. From these ideas of distance and extension, combined with the sensation of resistance, are easily derived all the other properties of bodies, — solidity, figure, surface, mobility, divisibility. External objects are thus, when analyzed, only internal phantoms,

fragments of the Ego, detached from it in appearance and opposed to it by an illusion. This illusion, however, is not, as Kant taught, the effect of the innate and inexplicable structure of the mind, but of an acquired disposition instituted in us by experience.

But with so many illusions, is there anything real corresponding to them? What is left us in bodies when we have pushed our analysis to its farthest?

In the first place, we find that, though there is no sensation in the nervous extremity, still less any color or sound outside of us, yet that there are situated the starting-points of the molecular displacements which occasion the sensations. There are certain disturbances of the nerves, and certain variations and differences of the objects, which *correspond* to the sensations felt. The latter have an almost constant connection with the former. What we call a body, when examined, reduces itself to a collection of certain powers of exciting sensations within us, — sensations of heat, sweetness, figure, resistance, extension, etc. And when we say that a body has the power to excite a certain sensation in us, we mean simply that such a sensation is possible or necessary under certain conditions. The powers, consequently the properties, consequently the substance of bodies, Taine thus resolves, as Mill has done, into "certain permanent possibilities of sensations for ourselves or other sentient beings," but he adds to this the element that these possibilities become necessities whenever the sensitive organism is brought into all the needed conditions for receiving such a sensation.

But a body exists independently of our observation; it precedes and survives us. It remains unchanged when we change, and changes when we do not. Certain of its events excite certain changes in other bodies. The marble in motion displaces another marble. The heated stone evaporates water. Bodies come thus to be defined and considered, not in reference to our sensitive events, but in reference to their own, and in reference to those that they occasion in other bodies. But in these respects, also, bodies are still groups of possibilities or necessities of sensations, more or less permanent. All these properties exist in relation to events, of ourselves, the body in

question, or other bodies; and all these events are defined in final analysis by our own events: they are more or less elaborated extracts from sensation.

Among these is there any one, Taine next inquires, which we may legitimately ascribe to bodies? Is there nothing intrinsic in bodies? Or are bodies indeed nothing more than a simple collection of permanent powers or possibilities, of which we can affirm nothing except the effects that they excite in us? Or indeed, as Bain and Mill, following Berkeley, think, are they pure nonentity, erected by an illusion of the human mind into substances and external things?

Having followed the idealistic path so unhesitatingly thus far,—having found nothing but hallucination in every process and result of the intelligence thus far,—the reader fully expects him to take the grand idealistic plunge through the empty shell of matter into the void inane beneath it. But here he suddenly and strangely pauses. He fears apparently to deprive science and physical knowledge of all solid foothold; and out of the vast field of phantoms and semblances to which he has reduced the world, he would, therefore, save a little tract which he may declare to be real and permanent. Though every other quality may be stripped from bodies, we are justified, he maintains, in believing that one quality, motion, still remains, and that it constitutes bodies independent existences. If all sentient beings were suppressed, bodies such as a stone, for example, would still exist. “And this does not merely mean that the possibility of certain visual, tactile, and other sensations would still subsist; it also means that the unknown things which we term molecules, and which make up the stone, would still subsist; in other words, that the movable motive-powers of which the stone is the aggregate would continue to weigh on the ground proportionately to their mass, and would go through the same internal oscillations as they do at present.” (Part II. Book II. ch. 1.)

Thus do we gain our knowledge of body, and such is its reality. It is the same with the mind. Its unity and permanence is an appearance only. It seems to be fixed only because a certain common character, its inwardness, is constantly repeated. What we call self is but an extract from our

various successive events, isolated to the mind by the oblivion of its connection with them, but actually nothing apart from them. Illusory in the metaphysical sense, it is not, however, in the ordinary sense. There is something corresponding to it, — something very analogous to that which, according to our analysis, constitutes the substance of bodies. This something is the permanent possibility of certain events under certain conditions, and the permanent necessity of the same events under the same conditions, with the addition of a complementary one, — all these events having a common and distinctive character, that of appearing as internal. (Part II. Book III. ch. 1.)

Our author next advances to the consideration, a second time and more fully, of general ideas and the process by which they are formed. They pass, he shows, through two stages. In the first the idea rises with the sign; it is as yet incomplete and vague. In the second it is rectified, and, by addition and subtraction, is made to correspond to its object.

There are other general ideas which correspond, not so much to actual things as to possible things, — the ideas which compose arithmetic, geometry, mechanics. These ideas we construct without having in view any real thing to which we seek to make them conform. These serve in arithmetic as preliminary outlines; in geometry, as models to which nature seems to strive to conform.

Next Taine considers how we form laws, general judgments, or propositions. They are formed by coupling together two general characters or ideas. Sometimes the two connected characters are simultaneous; sometimes one, termed the antecedent, precedes; the other, the consequent, follows. Laws concerning real things we learn by the various modes of induction, supplemented often by deduction. The laws of possible things are discovered by the deductive road. The propositions concerning them are not merely probable, but certain beyond our little world; at least, we are unable to believe or conceive that it is otherwise. The axioms and theorems of geometry, for example, are necessarily true always and everywhere. The contraries of them are not only incredible but inconceivable.

Here we have, then, the only kinds of propositions which are applicable to all cases, without exception. On their value depends the reach of human knowledge. What is their validity then? This depends on their origin. There are two principal answers. Kant and his school say that these propositions reveal to us, not a necessary connection of things, but simply a certain structure of the mind which does not allow us to conceive the ideas of these things except as so connected. Stuart Mill, starting from an opposite stand-point, arrives at a similar conclusion. These propositions are but truths of experience,—the summed-up impression left on our minds by things. Like all truths of experience, these laws then reach only to the establishment of a constant fact in the past, within the field of observation. Whether there is a connection between the things themselves, we are incapable of knowing. Taine differs, however, from both of these views. He shows that in axioms, and the consequences deduced from them, there must be a connection of facts as well as of ideas, because the two data are such that the first includes the second. The deduction is simply an analysis, which reveals parts and identities not expressly stated or clearly perceived, but which tacitly were included. Thus is established the necessity of the junction, not merely of the two ideas or hypotheses, but of the two facts or sets of facts, because the first, wherever it will be, will involve the second, since the second is a part of itself. Their connection, then, is not limited to the range of past or present experience, but is absolute and universal. (Part II: Book IV. ch. 2.)

From these considerations we may learn finally the nature of reasoning, the essence of laws, and the structure of things. When we have learned that a connection exists between two things, we are naturally led to ask, Why are they connected? What link or intermediate unites them or explains their union? In the discovery of this intermediate lies the secret of all demonstration, the key-stone of every law of nature.

Now this intermediate may be of many kinds. Sometimes it is composed of but a single element, sometimes of many; sometimes its components are successive; sometimes simultaneous; sometimes the component intermediates are similar in

kind, sometimes different. But however these minor qualities may vary, the essential nature of the explanatory intermediate remains the same, i. e. that it is always shown to us as a character or a sum of characters included in the first datum of the couple; more general than that datum when they are considered apart, and accessible to our grasp from being comprised in it, and separable from it by our ordinary processes of isolation and extraction.

Take any law requiring demonstration. It is composed of two data. The first datum is more complex than the intermediate, and contains it; the intermediate, again, is more complex than the last datum, and contains it. Thus the mind is carried on from the first to the last datum, and the two are coupled by means of the quality found to be common to them both. In the sciences of construction, of pure thought, we can discern easily this essential nature of demonstration. Every theorem is an analytical proposition. The proof consists in a process of analysis by which in the first datum, a collection of primitive factors or elements, there is found included a character which, either directly or through the mediation of more intermediates, includes the other datum and couples them. In the sciences of experience it is the same, though the difficulties of the process are much greater. It is not sufficient here to consult simply our conception of the first datum of a couple, and by reflection analyze the group into its elements. We are obliged to go outward into nature, and by laborious and lengthy processes of nature learn what are the elements or factors of our first group, before we can find the intermediate character by which it is attached to the other group. But when induction has discovered the properties of the factors, we can go on with the work of demonstration as in the constructive sciences. Whenever we are able thus to isolate and observe the elements of a compound, we can from the properties of the elements explain the properties of the compound, and from a few general laws deduce a host of particular laws. At a certain limit, to be sure, explanation is brought to a full stop. When, in this progressive decomposition, we arrive at compounds in which our consciousness, senses, and instruments are unable to discover simpler elements, explanation is at a stand-

still and is reduced to conjecture. Every science meets these limits. Such are the elementary sensation, the living cell, the chemical molecule, the ethereal atom. But though the explanatory intermediate is too minute or obscure for us, with our present means of observation, to detect it, we yet believe that it exists. There is, we are persuaded, a reason for every connection of facts, a reason for every law, — for the laws concerning mental compounds, as for the laws concerning real compounds; for the formation as well as for the properties of a planet or of a species. Questions of origin are but questions of what combination of properties will produce a certain effect. Besides indicating the existence, we can indicate beforehand the position and principal characteristics of the intermediate which still escapes us. It is a simpler and more general character than the first datum of the couple; it is included in that datum and appertains to its elements, and the properties of that datum, as well as its origin, have as their ultimate reason of existence the characters and previous state of its ultimate elements.

On these indications the thought flies off to extend this structure of things beyond our world and history, throughout the two gulfs of space and time, beyond all the distances to which imagination can attain, beyond all the confines which numbers or quantities fruitlessly swollen and heaped together can denote to the pure reason. Are we justified in acting thus? Taine boldly declares that we are. The further our extended experience drives back our horizon in space and time, the more explanatory reasons do we add to our store. Constantly we are filling up. Added to the probabilities afforded by these considerations is the positive proof given by the very nature of the relation of a subject to its attribute. The subject always includes the attribute, as a fragment, extract, or abstract of it. Hence, whenever two things are connected together, there must be an explanatory intermediate more general in character than the first member of the couple and included in it.

From this follows the proof of the principle on which induction rests, and also the axiom of causality. From this many other consequences flow, leading us, if we will pursue them, up

to the idea of existence itself and its elements and conditions. But as this would pass beyond the field of cognitions into that of metaphysics, M. Taine here ends his inquiries.

Such is the substance of M. Taine's philosophy. We have not been able, of course, to give any idea of the abundant illustrations and examples which at once enliven his exposition and sustain his argument. We have not been able to exhibit the width of his researches, or the polish of his style. We have been compelled to give in abstract terms a brief summary, which, despite the rigor with which we have compressed it, is still perhaps too long.

But thanks to M. Taine's admirable method of summing up at the close of each chapter the results therein reached, we are able to say that our account is given almost entirely in M. Taine's own statements.

Our readers can now see for themselves how subtle are his analyses, how bold, original, and ingenious is his system; how logically his conclusions flow on from one fundamental assumption to another. In these respects and many others, it is admirable.

His chapters on the nature of the reduction, revival, and obliteration of images; on illusions and their rectification; on the abstract ideas of geometry, arithmetic, and mechanics; and on the laws of possible things,—are highly to be commended. We can but commend, also, his design of securing aid for psychology in her perplexities from that rich quarry of natural science where so many treasures of knowledge have already been found, and more still, we believe, are to be found. But having gladly said thus much of praise, candor compels us to say more of blame.

His originality has been purchased, in great measure, by the sacrifice of what we deem the most precious truths. His boldness seems not seldom like the mental escapades of one who has thrown off regard for soberness of statement and the fundamental laws of thought. The assiduous attention which he has given to the observation of bodily conditions and external facts seems to have disqualified him from realizing fully pure mental or spiritual phenomena, as they exist in their simplicity, falling under the eye of consciousness. In his favorite *École*

de Médecine he has studied mental disease till he finds nothing but hallucination anywhere.

Perception, imagination, memory, extension, — each of these is an hallucination. Abstract ideas, personality, force, faculty, — these are but illusions of the intellect, mental fictions which everybody foolishly constructs.

Instead of M. Taine's treatise being designated "On Intelligence," it should be entitled "On the Illusions of Intelligence." It is not so much a system of psychology that he gives us, as one of mental pathology.

The fact seems to be that M. Taine has a most palpable and dangerous penchant for paradox. Whatever will astonish, he longs to prove to be true. Whatever belief common-sense trustfully rests upon, he is filled with the most ardent longing to knock from under it. That a notion is repugnant to the general opinion of mankind or condemned by current authorities is enough to make him embrace it with open arms.

This passion for paradox it is, more than any other one thing, which accounts for the various peculiarities of his system. This it is that renders every one of those ancient and fundamental ideas, self, matter, substance, cause, power, a *bête noire* to him. This it is that makes him labor to detect some delusion or mental phantom at the bottom of every intellectual process. This it is that, on the other hand, excites in him the ambition to restore to the external world that reality, to deduction that actual truth, and to the reign of law and reasons that universal empire, that the most eminent masters in contemporary philosophy had agreed must be stripped from them.

The reader is strongly tempted to believe that, if M. Taine had happened to live in an age or a country in which his own views had long ruled, he would have attacked them as rigorously as he now does the opposite doctrines.

It is easy for us to say in general that M. Taine's views are unsatisfactory to us. The reader will desire that we show in particular where and why they are so.

Let us take up, briefly, some half-dozen of his principal positions, and it will not be difficult to show that they are as objectionable to sound logic as to common-sense.

In the first place, let us consider M. Taine's views of abstract ideas. He maintains that properly there are none, but merely abstract *names*, which present themselves at the stimulus of the slightest individual likeness. There is in the mind at most but a general tendency urging an expression.

If this be so, we are at loss to see how an abstract name can be intelligently and consistently used. An abstract name, as Taine himself says, represents a precise and fixed character. There must be in the mind; then, something more than a general, vague tendency to expression; there must be a precise and fixed idea, the inward counterpart of the outward character.

M. Taine objects that of such a precise and fixed character, common to all various individuals of a class, we cannot have either perception, experience, or sensible representation. We grant this. But though this general character cannot be perceived or imaged as a separate thing, yet it can be *conceived*. The intellect can construct and determine it in thought through the various attributes, properties, or relations which are its elements.

The name, it is true, is very important in rendering the idea permanent and helpful. After we have become familiar with the name, we may, to be sure, often use it without referring back to the idea which formed it. Without language it is difficult to reason either exactly or rapidly or lengthily. But the abstract idea as necessarily preceded the formation of the word and established its use as the nerve-current the motion of the tongue. If there was no mental operation to separate and fix the elements which the word stands for, the word would symbolize nothing, and hence be as meaningless as the chatter of a parrot. M. Taine's position implies that there can be no thought without words. The fact is, however, that there can be. Experience with deaf-mutes who have acquired little even of the language of signs proves this. These show by their actions that they generalize, i. e. form concepts, to a limited extent. They classify and arrange observations; they analyze and compare attributes; they apply principles in deduction, infer them from data. Even infants, too young to talk, manifest the possession of general ideas. We have repeatedly seen one picking out

from a heterogeneous heap similar objects and placing them together. Once noticing a cat holding a mouse in its mouth, the child was asked where the cat had the mouse, and she pointed at once to *her own* mouth. Even many brutes, such as the dog and the horse, must have, it seems to us, general notions. How can we conceive, as a writer in the *Spectator* once asked, that a sheep-dog which did not know the species as well as the individual could get along at all in his professional life?

Secondly, in regard to sensation, we cannot consider M. Taine's analysis of the unit of sensation into minuter unconscious sensations as at all a logical deduction from the phenomena that he instances.

We are aware that there is unconscious cerebration, that there is unconscious reflex action, but it was left for M. Taine to discover unconscious *sensation*. It seems to us a contradiction in terms. A sensation is essentially something felt. When it is not felt, it does not exist. There may exist the physical condition of a sensation, there may exist the nervous vibration which ought to excite a sensation; but if these do not excite any conscious experience, there is then no sensation, properly speaking. When small separate vibrations, which given slowly are either not perceived at all or produce only noises, give rise, on being repeated in very quick succession, to a continuous musical note, it is not necessary to infer, it seems to us, that these were unconscious sensations which were fused together into a larger whole capable of conscious experience. It is much more likely that the fusion took place among the nervous *vibrations* anterior to any excitation of sensation. M. Taine insists that sensation does not take place until the vibration has travelled along the nerve clear to the nervous centre. Here is place and time amply sufficient for such fusion,—place and time where it is more likely than not that it would take place.

Thirdly, we fail to see the justice of characterizing the fabric of our mind as essentially *hallucination*. We do not deny that images often develop into hallucinations. We do not deny that there is more than one illusion connected with the process of perception. But M. Taine himself shows how images are

always prevented when awake and in health from developing into delusions. He admits that the practical results which perception attains are in almost all cases correct. It fails, indeed, only when its action is distorted by loss of limb or by some physical or mental disease. M. Taine admits also that these illusions which attend perception are nothing innate, but are instituted in us by experience. They proceed from the education of the senses. Moreover, the erroneous localizing of the sensation in the nervous extremity, instead of in the nervous centres, is not a thing properly to be laid to the charge of the much-abused perceptive faculty, the sphere of which is the knowledge of the non-ego, but it is due rather to M. Taine's pet faculty, — sensation itself. Making the subtractions required by these considerations, there is little left, it seems to us, to justify M. Taine in calling perception *fundamentally an illusion*, at best an honest illusion, or in designating the image and all the rest of our mental operations as *undeveloped hallucination*. Such a characterization is defining the rule by the exception, — the result by a single step, — the essence of a thing, not by its original characteristics, but by its acquired properties. If we imitated it, we might, with equal justice, call man fundamentally an undeveloped idiot, a calf an immature monstrosity, a saint essentially an honest sinner.

We are comparatively willing, however, to surrender the perceptive and imaginative faculties to the yoke of illusion which M. Taine would hang round their necks. But when he proceeds to banish the substance both of mind and matter to the same limbo of unsubstantial ghosts and lying delusions, we must vigorously protest. The doctrine of substance is the keystone of every system which gives genuine reality to the inward and the outward world. Hence M. Taine hurls it down with contempt as a baseless fiction of the mind. Having pulled out the centre stone of the arch, it is very easy to demolish the rest. Power, cause, self, and matter, as they are each of them but substance of various kind or acting in equally various ways, are equally devoid of real existence; air-castles which every mind, by some strange Nemesis, invariably builds up, and then becomes the dupe of that which it itself created.

Now we would ungrudgingly grant that substance is not a

thing perceived by the senses. It is a mental apprehension. But it is not a fiction. It is an honest intuition. The fact that it is instinctively and universally believed in bespeaks its truth.

On perceiving the various relations, properties, attributes, of an object, especially when perceiving these constantly repeated, the mind necessarily conceives a substance, a permanent being possessed of power, which holds these relations, to which these properties belong, in which these attributes inhere. For these qualities imply such a substance. We cannot separate length from something which is long, nor color from something which is colored, nor thought from a thinking being. And the substance of an object does not signify merely an assemblage of certain attributes, a series of certain events, a group of certain relations, but it is that permanent being which is the cause and the bond of these various attributes, events, and relations.

If there be no substance to mind or external body, but the one is a mere series of simple or transformed sensations, the other a loose group of possibilities or necessities exciting sensation, how are to be explained the constant connection and repetition of the same sensations; the persistent association and endurance of the same possibilities of sensation? Especially how is to be explained the fact that even when change in these takes place the permanence of certain elements is maintained amidst the greatest diversity?

We assert that this constant connection requires a constant bond; that the permanence of these effects demands the presence of a permanent cause, an enduring being possessed of power, — in other words, a substance.

If it be said that this necessary implication of thought does not imply a necessary implication in fact, we answer that, whether or not this last plea is itself sound, it is not open to M. Taine, because, in his chapter upon deductive reasoning, he expressly maintains that invincible connections of ideas imply a necessary connection in actual fact. If it be said that this substance is necessarily a thing unknowable apart from its attributes, we answer, that, though in fact the substance is indivisible from its attributes, in thought it must be distinguished. Though it is not known apart from its attributes, it is known *through* its

attributes ; and the attributes and the substance stand in such a fixed and indissoluble relation that the knowledge of the one enables us to know the other.

If the real existence of substance must be maintained, as we believe it must, that of mind, matter, force, and cause necessarily follow. For mind is spiritual substance ; matter, material substance ; force, the energy of substance ; cause, this energy producing effects.

For the existence of the self as a permanent, indivisible, identical being, we have the direct testimony of consciousness. It is a travesty upon the nature of the Ego to call it nothing but a series of sensations, images, and thoughts, the special activities of the nervous centres.

The mind is conscious of itself, not as a sensation or series of sensations, but as an existence present with every sensation, the being who *experiences* the sensation. The experience of the soul is not that at one moment it is an act, at another a pain, but that it is a being who acts and who suffers pain. Moreover, the fact is not merely that the soul, at the second moment, experiences a repetition of a similar effect, i. e. the inwardness of the state, but that the soul knows itself as still continuing one and the same being. Our states of course change, but the very conception of change implies the conception of an unchanged permanent element ; otherwise it would be no change, but the annihilation of one thing and the substitution of another. M. Taine, indeed, does not hesitate to advance to this conclusion. He unequivocally declares that when the series of our mental events ceases to exist, nothing remains of the mind or Ego. After profound slumber, then the awakening to consciousness would actually be a new mental birth or creation. What makes us imagine, says Taine, that it is the one and the same soul that still endures through the variations or interruptions of our mental states, is the constant repetition of a similar mental quality or qualities, owing to the constant renewal of the same physical conditions. In answer to such an astonishing assertion, we can only declare flatly that this is not a true analysis of our mental experience.

The testimony of consciousness is that after sleep we are no new existence, however similar, but the same identical exist-

ence. If it be not, how can we rely at all upon the veracity of memory ?

If there is no continuity between the self of to-day and the self of yesterday, how can I reason from the present recollections of the second self to the experiences of the first self, or from the past experiences of the first to the present experiences that the second would now receive ?

And as we maintain the existence of spiritual substance as an enduring operative being, directly known by the mind, so we would maintain the existence of material substance and of force. The mind directly knows material substance, as a permanent existence occupying space and causative of specific sensations in the sentient soul. The mind must know something more of matter than certain sensations excited in us, from which we assume the existence of certain possibilities or necessities of sensation. We should separate its agency from the agency of the mind, and assign to it its attributes of extension, solidity, action on the senses, etc.

So also do we know force as a something more than a mere particularity of one fact to follow another. We are conscious, in our own exercises and receptions of it, that there is effort in it, causal efficiency ; that there is not merely an observed sequence of two events, but that there is an activity or energy, in the first of which the second is a necessary consequence, provided there is no preventive condition. We were quite surprised to see one so full of the spirit of physical science reject an idea so fundamental to it, and of late so fruitful in its rewards to the physical investigator, as the idea of force. While Herbert Spencer would find no real existence behind phenomena but force, and Tyndall does not conceive he had reached an adequate explanation of phenomena until he has arrived at some permanent force ; while Büchner and his compeers on the other side of the Rhine are crying out that force and matter constitute the only infinite and suffice to explain the universe ; — Taine maintains that it is but a mental fiction. Perhaps we may leave to one party the task of answering the other.

It is with a feeling of relief that the reader, having been led down and down, finding every foundation on which he would

rest his foot an empty bubble, is at last allowed to stop just as he is within a hair's breadth of the abyss of total unreality and nothingness, and his footsteps are thenceforth directed upward. This latter part of M. Taine's work, in which he turns from the picking to pieces of what others have believed in, to try his own hand at establishing some realities, is much more satisfactory to the sober-minded thinker than the progressive iconoclasm which constitutes the first part. But, unfortunately, the two portions fit ill together.

The consciousness of the ruin which his analysis has already wrought among the fundamental ideas with which synthetic philosophy usually builds, prevents him from giving the best support to the positive reality and knowledge that he would vindicate; and even the foundations on which he does lay them can be regarded as sound, only on condition that much of the destructive work which preceded it be pronounced unsuccessful. M. Taine seems to take great pride in this second part of his work, in his establishment, against John Stuart Mill, of the reality of bodies and the universal validity of deduction and the explanatory reason. He has seen, what Mill either did not see or did not regard, that scepticism of these things takes from physical science all its certainty and value. But Mr. Mill is plainly the more logical of the two. If Taine had followed out his premises with the same rigor that the English metaphysician did his, he would have ended in the same sceptical idealism. For instance, consider the objective reality which Taine vindicates for bodies. In addition, he says, to the possibilities or necessities of sensation for sentient beings, there exists in bodies such as a stone, and there would still exist if all sentient beings were destroyed, the *molecules* which make up the stone. But what does M. Taine mean here by molecule? In the ordinary scientific conception of the word, it implies a minute quantity of matter and of force. But we may conceive it by either one of these attributes without the other. We may say that force is a mere quality or mode of action of matter, and hence a molecule is essentially matter; or, on the other hand, we may say that the conception of a centre of force is entirely sufficient to explain all the phenomena of the molecule, and that to clothe it with matter also is superfluous. But one of

these two attributes, either that of matter or that of force, is essential to enable us to conceive a molecule. Yet M. Taine has rejected them both. What then is left to constitute this molecule which is the ultimate reality of the universe ?

Taine explains it first by saying that he means by the molecules of a body "the movable motor powers which weigh on the ground, and which continue to go through with the same internal oscillations"; and a little further on he designates as the ultimate objective realities "the motions of the body," "the series of events which tend to accomplish themselves." Power, weight, tendency, motion, — these, then, are what constitute the real world. But the first three of these, — power, weight, tendency, — are not these the old nonentity, force, under very thin disguises ? Finally ridding ourselves of him, let us see what we have left. Plainly motion, and motion alone. Motion, with nothing to be moved, no force to start it or sustain it, no space in which it may occur.

Surely, here is the most spectral and unsubstantial foundation on which philosopher ever attempted to base a world of real existence.

Moreover, with what legitimacy or consistency does M. Taine refrain from driving the axe of his analysis through this last straw of the common-sense belief in objective reality, and showing it to be but illusion, as he has through all the rest ? He has already branded all the sensible properties of bodies, such as color, extension, form, solidity, as mere phantoms, extracts of the Ego more or less elaborated, altogether subjective in their character, and known only by a process whose essence is hallucination.

But is not the idea of motion equally an extract from our subjective experience, an idea derived solely from our sensations and by that same hallucinatory process, — perception ? M. Taine admits it. Why then is this to be credited with objective reality, while the former are not ? The only reason that Taine seems to have, is the necessity that he feels there is for some solid foundation for knowledge, and the very slight degree of subjectiveness and illusion that alone is left in the idea of motion. But logically the slightest tincture is as fatal as the fullest dose, and Taine ought no more to have granted objec-

tive existence to motion any more than to matter, force, figure, or space. Indeed, the first implies the rest. Where there is motion there must be something to be moved, something to start the motion, some space or extended thing between two separate points of which the motion can take place, and finally some line or figure described by the motion.

Logically, M. Taine ought to have gone on, and, with Mill and Bain, denied us any knowledge of an external world independent of us, or he should have halted while he still had something satisfactory to stand upon.

A similar inconsistency M. Taine is betrayed into in his exposition of the explanatory reason and of induction. He essays to establish for them, as we have said already, universal validity. When two objects are connected, there is always a character included in the one which includes the other.

Every subject includes its attributes. Therefore the presence of one general attribute which is known involves the presence of another as yet unknown one. Hence there is a reason, a law for everything, universal and invariable.

Now, this proof seems to us valid only on one condition, i. e. that the various attributes of bodies have some real connection. If they are bound together by their inherence in a common substance, if they are united by their origin as common effects of a common cause, if event is linked necessarily to event by some compulsive force, then it will of course follow that the presence of one attribute of a group or a series is a sufficient guaranty of the presence of the other. But if the ideas of substance and force be rejected as mental fictions, and cause be regarded merely as antecedent condition, as they have been by M. Taine, then the attributes of a body become only a loose bundle of facts, its successive states a mere unconnected series of possibilities. There remains no longer the slightest reason why the presence of one of these discrete phenomena should at all involve the other.

Possessing no deeper common being or inherent link to keep them together, but grouped by some chance, there is no reason why in another solar system, as Mill supposes, nay, in this present world at our very next observation, the qualities of bodies may not present a radically different association.

The fact is that there is no adequate foundation for the process of induction and the universal reign of law, except in the intuition of the principle of causality. Induction assumes the reality of causative power as necessary to explain the origin of all phenomena, and it implies that the various properties and events of bodies are necessarily connected together by underlying substances and forces. The process of deduction may perhaps be explained by resolving the relations of content into those of extent, and taking as our guide the maxim, "whatever is a part of a part is a part of the whole." Sir William Hamilton preceded M. Taine by many years in proposing this. But when it is sought to extend this method of proof to induction, it manifestly is unequal to sustaining the load laid upon it. Even deductive reasoning is not fully explained until the relations of quality and the distinctions of attribute and substance, cause and effect, are taken into consideration. As an acute thinker of our own country has remarked in a work which ought always to keep his name high on the roll of philosophical authorities, "We are able to give reasons and to support our knowledge by reasons, because we believe the various objects and phenomena of the universe exist and are produced in dependence upon one another. In cases of reasoning where actually existing things with their causes and laws are not concerned, it will be found that their relations, whether mathematical or logical, are treated or regarded as causal agents, constituting elements or operative laws, and as in this way involving necessitated or logical relations." (Porter's *Human Intellect*, p. 449.)

To sum up our criticism of M. Taine, we should say that his great faults as a psychologist were these three: He slashes too freely with his undoubtedly keen analytic knife; he relies too exclusively upon the external observation of physical science; he distrusts too much the simple testimony of consciousness and universal spontaneous belief.

The lancet of the mental dissector may often discover many unsuspected elements, but for the most part dissecting consciousness is like dissecting the material brain. The most characteristic and vital qualities change and disappear before the bungling knife reaches them; and often, while the operator

is cutting away, or thinks he is cutting away, some diseased or abnormal part, he destroys the most essential structures.

We regard the discoveries of the anatomist and the physiologist as of great value to the psychologist. The mental philosophy which at the present day despises and ignores science marks itself as bigoted and absurd. The immense revolution which has taken place in the prevalent theories of sense-perception since the application of physical investigation to the solution of its problems is sufficient to vindicate a place for it in mental inquiries. But its proper place is a subordinate one. He who takes it as his sole or chief guide will fall into many errors. It is a general truth never to be ignored, that phenomena of one order can never be correctly interpreted by laws of an essentially different order. The physical inquirer, moreover, has this special disadvantage, that he can approach mental phenomena only from the outside. If our eyes could pierce everything, it would matter little at what point of view we took our station. But we have only a limited view; we walk in the world as between opaque walls. And when with the microscope and the scalpel we seek to study the mind, we can reach only its dwelling or instruments, the nerves and brain. We may trace the course of afferent and efferent nerves, and time the vibrations as they pass along; we may learn the varied structure of sensitive centres; we may behold the cerebral lobes contract and expand; we may mark the effect upon their action of nutriment and exercise, lesion and disease,—but still we are far from having entered at all the arcana of the mind. Even if, by some new optical instrument, we could gaze into the very centre of the brain, and instead of the inductions and probabilities, which are all that we now possess, we could behold every minutest part and the phases of its daily history, the passage of every nerve current and the spinning of every molecule, we should still be on the outside of the mind, we should still have, not sensation but motion, not mind but matter. None of these physical facts are mental processes. They do not constitute them. They cannot be found in them by analysis. There is no evidence sufficient to show that they even produce them. They are but their usual concomitants or conditions. The

physical antecedents might all be supposed to exist and act without the occurrence of a single conscious experience. The material and the mental events usually, indeed, stand in relation ; but there is nothing in this usual relation that involves its necessity, still less the identity or equivalence of the two orders of events.

Now, if this chasm which always separates the physical from the mental, and allows physiological observation only a view of the soul's dress or tool-box, — never of the soul itself, — be borne in mind, much profit may be derived from such studies. But the tendency always is towards forgetting, or towards a bold push, such as M. Taine has made, to bridge the gulf. The higher ideas and faculties of the soul are traced down into the lower ; ideas into images, images into sensations. Able to perceive from the outside only the succession of events or their relation to their physical conditions, they are naturally led to regard these as constituting their whole character. The bond of personal unity will next be united by some analytical legerdemain, and the mind left a surface series unsupported by anything. The pillars of substance, force, extension, etc., are next taken from under bodies, and the material world becomes a realm of shadowy oscillations performed and originated and taking place in nothing. Having thoroughly disorganized both the realm of matter and of mind, and having made the reader's brain dizzy with contemplation of the universal motion which is all that is left of the solid globe, it is not difficult to slip him over the chasm before he perceives it, and persuade him that a motion and a sensation, an idea and a molecule, are only two faces of one and the same thing. Henceforth all is smooth sailing, inasmuch as the whole of psychology becomes now properly what Auguste Comte called it in his "Positive Philosophy," "a simple subdivision of animal physiology."

If the one step, the identifying of motion with sensation, be legitimate, all the rest is sufficiently so. But if that step cannot properly be taken, the chasm remains, the whole process must be condemned. And we must say that M. Taine has failed in this one essential step. The only proofs that he offers are the analogy of the difference of sensations according to

the route that they enter the mind, and the existence of unconscious, rudimentary sensations which he had before essayed to establish. The latter we have already shown the illogicalness of; the former merely suggests, but proves nothing. The words "mental" and "physical" mark the widest distinction known to us in nature. Phenomena of the one order are entirely unlike phenomena of the other.

Though constantly related in all human beings, they stand as constantly in sharp antithesis, as well in their simplest as in their most complex forms, at their nearest points of contact as at their most remote divergences. "Between the idea of a motion and the idea of a sensation," says Tyndall, "there is nothing in common." "No exertion of thought," says Herbert Spencer, "can enable us to conceive either of these ultimate elements as convertible the one into the other." But if, as Taine tells us, thought is but vibration seen from within instead of from without, why does it thus vigorously repudiate any identity with its other side?

The fact is, that we cannot study the mind successfully unless we take consciousness as our chief instrument. That alone gives us the inside view, the immediate vision. In its crude, unrefined form, as the ignorant, unreflecting mind apprehends it, its testimony may perhaps mislead. It may need to be sifted. It may need to be tested, assisted, magnified, as Taine says; but when its strict and pure deliverances are ascertained, we can never have too much of them; we can find no source of information which can give us a more direct and more intimate knowledge of the mind. If consciousness needs the assistance and connection of physiology to attain a true knowledge of the mind, still more does the physiologist need the help of consciousness, and a firm trust in it. To find the very problems to be explained or the simpler mental elements which he would resolve them into, he must resort to the interspection of consciousness. No unconscious action or connection of actions can, of themselves, tell us anything of the conscious states of the soul. A true philosophy must not only start with consciousness, but will consult her at every turn; and whenever it finds itself offending her deepest instincts, it will know that somehow it has missed the right path.

JAMES T. BIXBY.